IN THE SPECIFICATION:

The specification as amended below with replacement paragraphs shows added text with <u>underlining</u> and deleted text with ~~strikethrough~~.

Please REPLACE paragraph [0005] on pages 1-2 with the following amended paragraph:

[0005] In organic EL display devices having the above-described structure, as positive and negative voltages are applied to electrodes, ~~filled~~ holes migrate from electrodes to which the positive voltage is applied to a luminescent layer via a hole transport layer and electrons migrate from electrodes to which the negative voltage is applied to the luminescent layer via the hole transport layer. In the luminescent layer, the holes and the electrons re-unite to generate excitons. As the excitons ~~de-exite~~ <u>de-excite</u>, fluorescent molecules in the luminescent layer emit light, thus forming an image.

Please REPLACE paragraph [0026] on page 6 with the following amended paragraph:

[0026] These and/or other aspects and advantages of the invention will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings of which:

FIG. 1 is a cross-sectional view for illustrating light bleeding that occurs in a conventional organic EL display device;

FIG. 2 is a cross-section of an organic EL display device assembly according to a first embodiment of the present invention;

FIG. 3 is a magnified cross-section of the organic luminescent layer of FIG. 2;

FIG. 4 is a cross-section of an organic EL display device assembly according to a second embodiment of the present invention;

FIGS. 5 and 6 are cross-sections of organic EL display device assemblies according to third and fourth embodiments of the present invention;

FIGS. 7 and 8 are cross-sections of organic EL display device assemblies according to fifth and sixth embodiments of the present invention;

FIGS. 9 through 12 are cross-sections of organic EL display device assemblies according to seventh through tenth embodiments of the present invention;

FIG. 13 is a graph showing optical efficiency versus a gap between an optical loss prevention layer and an electrode layer;

FIG. 14 is a graph showing optical efficiency versus ~~the length~~ a height of protrusions of the optical loss prevention layer; ~~and~~

FIG. 15 is a graph showing optical efficiency versus ~~the depth~~ a thickness of an index layer of TiO_2 in an organic EL display device assembly;~~.~~

FIG. 16 is a representation of an example of a desktop computer utilizing an organic EL display device assembly in accordance with an embodiment of the present invention;~~.~~ and

FIG. 17 is a representation of an example of a laptop computer utilizing an organic EL display device assembly in accordance with an embodiment of the present invention.

Please REPLACE paragraph [0029] on page 7 with the following amended paragraph:

[0029] Referring to FIG. 2, the organic EL display device assembly 20 includes first and second electrode layers 22 and 23 and an organic luminescent layer 30. The first electrode layer 22 is transparent and is formed on the upper surface of a transparent substrate 21 in a predetermined pattern. The organic luminescent layer 30 is formed by stacking organic films on the upper surface of the first electrode layer 22. The second electrode layer ~~30~~ 23 is formed on the upper surface of the organic luminescent layer 30 and has a predetermined pattern.

Please REPLACE paragraph [0031] on page 7 with the following amended paragraph:

[0031] As shown in FIG. 3, the organic luminescent layer 30 is formed by sequentially stacking a hole implantation layer 31, a hole transport layer 32, a luminescent layer 33, and an electron

implantation layer 34 on the upper surface of the first electrode layer 21. Preferably, the ~~organic~~ luminescent layer ~~30~~ 33 is formed of a low polymer organic compound, such as tris-8-hydroxyquinoline aluminum (Alq3), or a high polymer organic compound, such as, polyparaphenylene-vinylene (PPV) or poly(2-Methoxy-5-(2-Ethylhexyloxy)-1,4-phenylenevinylene. However, the material of the ~~organic~~ luminescent layer ~~30~~ 33 is not limited to these materials.

Please REPLACE paragraph [0033] on page 8 with the following amended paragraph:

[0033] The optical loss prevention layer 100 may be a diffraction grating having a plurality of protrusions 111 each having a predetermined pitch (P) and a predetermined height (H). Preferably, the pitch P of the protrusions 111 of the diffraction grating is 200 nm to 2000 nm, and the height H thereof is 50 nm to 5000 nm. Each of the protrusions 111 may have various shapes, such as~~,~~ a circular cylindrical shape~~,~~ or a multilateral pyramidal shape. The protrusions 111 may have any shape as long as they protrude to have a predetermined pattern. Alternatively, a thin film having a plurality of through holes for a diffraction grating may be formed on the upper surface of the transparent substrate 21.

Please REPLACE paragraph [0039] on page 9 with the following amended paragraph:

[0039] As shown in FIG. 7, the optical loss prevention layer 210 formed on the photonic plate 200 is comprised of protrusions 211, each having a predetermined height. Alternatively, as shown in FIG. 8, the optical loss prevention layer 220 is a thin film having first and second areas formed of two materials with different refractive indices. Here, at least one of the first and second areas is patterned. The first areas of the optical loss prevention layer 220 may be arranged in dots, but the first areas are not limited to such an arrangement. Preferably, the difference between the refractive indices of the materials of the first and second areas is no less than 0.3 and no more than 3. More preferably, the refractive index difference is as large as possible within the range of 0.3 to 3. If the refractive index difference is less than or equal to 0.3, the interface between the organic luminescent layer 73 and each of the electrode layers 72, 74

provides a low scattering efficiency. Thus, the ~~reflexibility~~ amount of light emitted from the organic luminescent layer 73 that is reflected at the interface increases, and accordingly, the amount of light ~~bleeding while penetrating~~ that is bled off and penetrates the substrate 71 decreases.

Please REPLACE paragraphs [0042] and [0043] on page 10 with the following amended paragraphs:

[0042] In the pixel area 160, a second electrode layer 161 is formed on the upper surface of the second insulating layer 178 to have a predetermined pattern and to be electrically connected to the ~~second insulating layer 178~~ drain electrode 175 through a conductive connector 161a formed within the second insulating layer 178. An organic luminescent layer 162 is formed on the upper surface of the second electrode layer 161 to have a predetermined pattern. A first transparent electrode layer 163 is formed on the organic luminescent layer 162. A third insulating layer (not shown) for achieving planarization may be formed on the upper surface of the second insulating layer 178 on which the first electrode layer 163 has been formed. Preferably, the third insulating layer is formed of a transparent material that does not interfere with the bleeding of light emitted from the organic luminescent layer 162.

[0043] The photonic plate 200 on which the optical loss prevention layer 100 is formed is attached to the third insulating layer of the organic EL display device assembly, thus forming the fine space layer 50 between the third insulating layer and the photonic plate 200. As described above, the fine space layer 50 may be filled with an inert gas or evacuated. As shown in FIG. 9, the optical loss prevention layer 100 on the photonic plate 200 may be composed of protrusions 111 with a predetermined pitch and a predetermined height. Alternatively, as shown in FIG. 10, the optical loss prevention layer ~~100~~ 120 may be a thin film formed of different materials with different refractive indices to have first and second areas.

Please REPLACE paragraphs [0046] through [0050] on pages 11-12 with the following amended paragraphs:

[0046] In organic EL display device assemblies having structures as in the above-described embodiments, when a predetermined voltage is applied thereto to illuminate selected pixels on the first electrode layer 22 or 72 and the second electrode layer 23 or 74, holes introduced from the first electrode layer 22 or 72, which is an anode, move to the hole transport layer 32 via the hole injection layer 31, while electrons are ~~filled~~ injected into the luminescent layer 33 or 73 via the electron injection layer 34. The electrons and holes are re-united in the luminescent layer 33 or 73 to create excitons. As the excitons de-excite, fluorescent molecules in the ~~organic~~ luminescent layer ~~30~~ 33 or 73 emit light. The generated light bleeds to the outside via the first electrode layer 22 or 72, the optical loss prevention layer 100, 120, 210, or 220, and the fine space layer 50.

[0047] Because the optical loss prevention layer 100, 120, 210, or 220 and the fine space layer 50 are formed of ITO between the first electrode layer 22 or 72 and the substrate 21 or 71 or between the third ~~insulting~~ insulating layer (not shown) and the photonic plate 200, optical loss due to the reflection of light at the interface between the substrate and the electrode layer may be reduced.

[0048] In other words, since the refractive index of the organic luminescent layer 30 (or 70) or the first electrode layer 22 (or 72) is higher than the refractive index of the second insulating layer or glass for the fine space layer 50, light is reflected at the interface between the substrate 21 (or 71) and the first electrode layer 22 (or 72). However, because the fine space layer 50 and the optical loss prevention layer 100 (or 210) ~~or 220)~~ are formed between the first electrode layer 22 (or 72) and the substrate 21 (or 71) or between the third insulating layer (not shown) and the photonic plate 200, the first electrode layer 22 (or 72) and the protrusions 111 of the optical loss prevention layer 100 (or 210) ~~or 220)~~ cause evanescent wave coupling. Accordingly, the fine space layer 50 between the first electrode layer 22 (or 72) and each of the protrusions 111 generates evanescent waves. Thus, part of light guided by the first electrode layer 22 (or 72) is transported to and diffracted by the optical loss prevention layer 100 (or 210). Consequently, light bleeding efficiency increases.

[0049] If the thin film 120 or 220 having first and second areas defined by patterning two different materials with different refractive indices is adopted as an optical loss prevention layer,

the first and second areas cross each other. Accordingly, the mean refractive index of the optical loss prevention layer may be adjusted to a refractive index that may widen a total reflection angle. Thus, an anti-reflection occurs to improve the light bleeding efficiency.

[0050] The following experiments were performed to compare the amount of light bleeding in an organic EL display device having the fine space layer 50 and the optical loss prevention layer 100 (or 210), ~~or 220),~~ the amount of light bleeding in an organic EL display device having only the optical loss prevention layer 100 (or 210), ~~or 220),~~ and the amount of light bleeding in an organic EL display device having neither fine space layers nor optical loss prevention layers.

Please REPLACE paragraph [0052] on page 12 with the following amended paragraph:

[0052] A first electrode layer, an organic luminescent layer, and a second electrode layer were sequentially stacked on the upper surface of the resulting substrate and between the resulting substrate and a fine space layer. FIG. 13 is a graph of a measured optical efficiency versus the width of the gap of the fine space layer. FIG. 14 is a graph of optical efficiency versus the ~~length~~ height of the cylindrical protrusions.